ASTR 100 Spring Semester 2020

"Life and Intelligence in the Universe"

1. Overview
ASTR100 is a 1-credit-hour seminar course originally intended for freshmen interested in astronomy and astrophysics. But other majors and non-freshmen are welcome. The topic chosen for this semester is "Astrobiology: Life and Intelligence in the Universe." This is not a distribution course.

2. Instructor
Prof. Edison Liang
Office: Rm 342 Herman Brown Hall (HBH) Office Hours:
Wed 11am – 1 pm or by appointment.
Telephone: x3524; Email: liang@rice.edu

3. Class Website: http://spacibm.rice.edu/~liang/astr100
Please check regularly for news and announcements posted on the class website.

4. Classroom and Time
Class is currently set for Wed 2-2:50 pm (Sec.001) or Wed 3-3:50 pm (Sec.002) in W GRB W212. Students who cannot make the organization meeting on Wed 1/15/20 but who still want to enroll in Spring 2020, should email instructor with their preferred class time .

5. Class Format
This is a seminar course (one hour per week). Students are expected to do most of the talking using powerpoints. After an introductory overview by the professor, students will take over the weekly classes by presenting summaries and commentary on each Chapter of the Text, plus related online material from the web and other literature, followed by questions and answers from the audience. A round-table discussion of material in each Chapter and/or questions posed by the speaker will follow. All students should participate in the Q & A and round-table. Class participation is an important part of the grade and learning experience for this course. Students who miss class must give prior written notice and justifiable reasons to instructor.

6. Text
"Life in the Universe" by J. Bennett & S. Shostak
© 3rd Edition 2012 or latest, Addison-Wesley
This is an excellent (though rather non-mathematical) comprehensive discussion of astrobiology, which will serve as a framework for topics covered in this class. Students will take turns to summarize and discuss each Chapter plus related material from the web and other literature. Nonetheless, all students are expected to familiarize with and participate in the discussions of all chapters, including those chapters he/she is not presenting.

Other references:
"Intelligent Life in the Universe" by I. S. Shklovskii & C. Sagan © 1998 Emerson-Adams
"An Introduction to Astrobiology" edited by D.A. Rothery, I. Gilmour and M.A. Sephton 2003 edition Cambridge University Press
"Complete Course in Astrobiology" edited by G. Horneck & P. Rettberg 2007 edition Wiley-Vch, Germany

7. Grade
Class participation and attendance: 15%.
Presentations: 45%
Final Term Paper (≥7-pages): 40%

8. Rice Honor Code
Students are expected to uphold the Rice Honor Code. Students are allowed to work together in preparations, but the final presentation and term paper must be his/her own work. Material downloaded from the web must be acknowledged and given proper references.

9. Course Objectives
This is a course on the science of life and intelligence in the universe. While there will be plenty of speculation on many topics in astrobiology, the methodology should be based on hard science, established facts and logical reasoning. Students will be introduced to all fields of science relevant to life and intelligence on earth and beyond, including astronomy, physics, chemistry, biology, geology, climatology, planetary science, space exploration and computer technology. In addition, the powerpoint presentations will be used to train students in the skills of communication and public speaking, and the term paper will be used to train students in writing skills, literature search and thinking outside the box.

10. Learning Outcomes
Students will take turns presenting and summarizing the material of one Text chapter each week. All students will discuss in a round-table format the problems and questions at the end of each Chapter, plus additional questions posed by the speaker and/or the instructor. Through presentations and questions, students will improve their communication and public speaking skills. Through round-table discussions, students will develop skills in debate and group-interaction. In addition to learning scientific facts, students will learn about the scientific method, and become knowledgeable of major unsolved scientific problems and latest advances in technology. The final term paper will help students to improve their writing skills. Both the slide presentation and the term paper will train students on how to use the internet to search for and extract useful and trustworthy information.

11. Disability
Any student with a documented disability that requires accommodation should contact both the course instructor and Disability Support Services in the Allen Center.

12. Topic Sequence

The topic sequence follows the Chapters in the textbook "Life in the Universe". Below is a tentative schedule based on 13 class weeks after the first week.

Week #	Topic	Text Chapter	Speaker
00	Organization & Overview	N/A	Professor
01	A Universe of Life	01	Student
02	Science of Life	02	Student
03	Universal Context of Life	03	Student
04	Habitability of Earth	04	Student
05	Nature of Life on Earth	05	Student
06	Origin and Evolution of Life on Earth	06	Student
07	Search for life in solar system	07	Student
08	Mars	08	Student
09	Life on Jovian Moons	09	Student
10	Nature and Evolution of Habitability	10	Student
	& Habitability outside the solar system	11	
11	Search for Exoplanets	N/A	Student
12	Extraterrestrial Intelligence	12	Student
13	Interstellar Travel & Fermi Paradox	13	Student